JAPAN

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JIS A 5537 (1996) (English): Adhesives for anchoring wooden blocks

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The citizens of a nation must honor the laws of the land.

Fukuzawa Yukichi

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JIS

JAPANESE INDUSTRIAL STANDARD

Adhesives for anchoring wooden blocks

JIS A 5537–1996

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JAPANESE INDUSTRIAL STANDARD J I S

Adhesives for Anchoring wooden Blocks A 5537-1996

1. Scope This Japanese Industrial Standard specifies the adhesives used for bonding wooden blocks in order to prepare the backings for wall and floor of structures (hereafter referred to as "adhesives").

Remarks 1. The following standards are cited in this Standard :

JIS A 1611	Testing methods for bond strength of adhesives and of installed glue-joints in anchoring wooden block
JIS G 3141	Cold-reduced carbon steel sheets and strip
JIS K 2207	Petroleum asphalts
JIS K 6833	General testing methods for adhesives
JIS Z 8703	Standard atmospheric conditions for testing
JIS Z 9001	General rules for sampling inspection procedures

2. The units and numerical values given in { } in this Standard are based on the traditional unit system and are appended for informative reference.

2. Type

2.1 Classification by main components Adhesives shall be classified as given in Table 1 according to their main components.

Table 1. Classification by main components of adhesive

Type	Main component
Vinyl acetate resin series solvent type	This type consists mainly of vinyl acetate resin, and includes the types of adhesives compounded with other resins, plasticizer, filler or organic solvent.
Epoxy resin series	This is a two-part type adhesive, one component being the main agent of epoxy resin and the other a hardener composed mainly of polyamine, both of which respectively include the compound with other resins or fillers.

2.2 Classification by uses Adhesives shall be classified as given in Table 2 according to their uses.

Table 2. Classification by uses of adhesive

Classification	Use
For wall	To be used mainly for wall
For floor	To be used for floor only

3. Quality The quality of adhesives shall comply with the following requirements:

(1) Adhesives shall be uniform in quality, and free from stringiness and alien matters harmful to adhesion.

(2) Adhesives, when tested in accordance with 4., shall meet the requirements given in Table 3.

Table 3. Quality of adhesives

	For wall	For floor
Slippage mm	Under 5	–
Spreadability	Including no bubble, remaining uniform ridge made by combing trowel and adhering completely to bonded surface	
Tensile cleavage strength N/mm{kgf/cm}	20{20.4} or over	

(3) Adhesives shall satisfy the requirement given in (1) and (2) even when having been stored for the term of effectiveness or until its expiration date of effectiveness at ordinary temperature and humidity (1).

Note (1) Ordinary temperature and humidity is the standard condition [20 ± 15℃ temperature and (65 ± 20) % humidity] specified in JIS Z 8703.

(4) On the container of vinyl acetate resin series solvent type adhesives, the limit time for bonding obtained in the test in 4.5 shall be marked in accordance with the specification in 7.

On the container of epoxy resin series adhesives, the working life obtained in the test in 4.6 shall be marked in accordance with the specification in 7.

(5) The tests for compressive shear strength and for shock resistance shall be left to agreement between the parties concerned. The test method shall conform to JIS A 1611.

4. Test

4.1 Test condition Test condition shall, unless otherwise stated, conform to the standard condition in JIS A 1611.

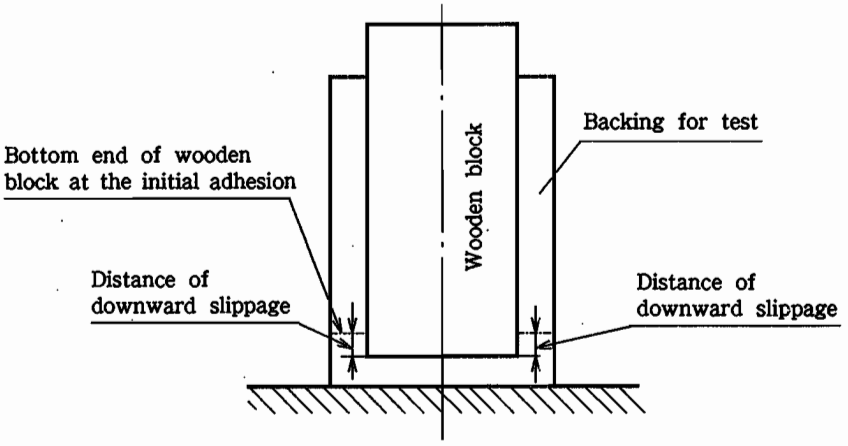
4.2 Slippage Test on slippage shall be as follows:

(1) Test body The wooden test block and the backing for test shall be the same as that for the shock test and tensile cleavage test specified in 4. of JIS A 1611.

(2) Test mehtod Allow to stand the test body immediately after adhering in accordance with 5.(2) of JIS A 1611 with the adhered surface vertical as shown in Fig. 1.

After 72 h, measure the distance by which the wooden block has slipped down, at both sides of the wooden block using the rule accurate to 0.5 mm or more, and adopt the larger value in mm after rounding it off.

Fig. 1. Slippage test method

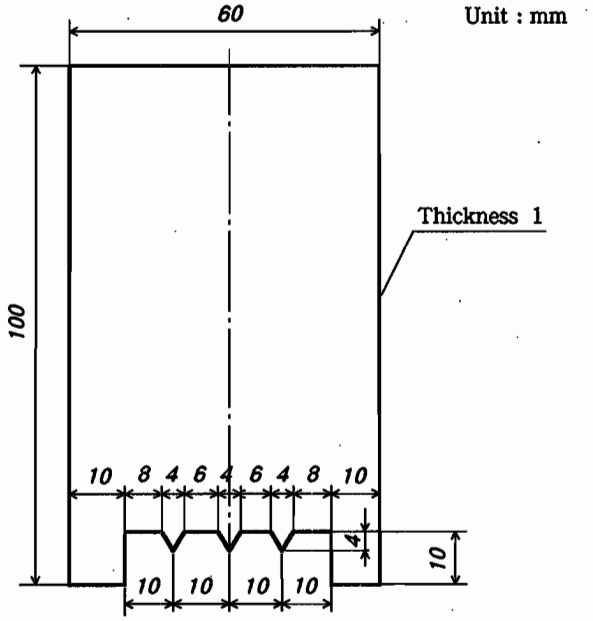


4.3 Spreadability Test on spreadability shall be as follows :

(1) Test body The test wooden block used for this test shall be the same as that for the shock test and tensile cleavage test specified in 4. of JIS A 1611.

(2) Tool for spreading The tool for spreadability test shall be as shown in Fig. 2. The material of tool for spreading shall, however, be of SPCC for general use specified in JIS G 3141.

Fig. 2. Tool for spreading in spreadability test



Remarks: The numerical values are the dimension of approximate standard.

(3) Test method After putting a suitable quantity of adhesive at one corner of the surface to be adhered, and holding the tool vertically to the surface, spread the adhesive by drawing the tool while squeezing the adhesive at a constant speed and observe the spreading condition. Adjust the speed of this drawing so as to cover a distance of 120 mm within 2 s or so.

4.4 Tensile cleavage strength The tensile cleavage strength shall be represented by the average calculated from the tests made on five test bodies in accordance with 7.4 of JIS A 1611.

4.5 Limit time for bonding In accordance with 5.(2) of JIS A 1611, spread the adhesive on several wooden blocks at the same time, and then stick them to the surface of backing one by one with the interval of five min. After curing them under the standard condition given in Table 2 of JIS A 1611, carry out the tensile cleavage strength test described in 4.4. and take the range of time from the minimum test time corresponding to at least the strength 20 N/mm {20.4 kgf/cm} of tensile cleavage strength given in Table 3 to the maximum test time as the limit time for bonding.

4.6 Working life Test on working life shall be as follows :

(1) Test apparatus Penetrometer, needle, and sample container shall comply with those specified in 6.3.2 of JIS K 2207. Total amount of dropping penetration shall be 12.5 g.

(2) Test method Nearly fill up the container with the sample using a spatula or knife taking care not to leave bubbles inside.

Then, allow the measuring needle of the penetrometer to penetrate into the sample to stay for 5 s, and measure the distance the needle penetrates with the penetrometer to the nearest 0.1 mm. Take 0.1 mm of penetrated length as one unit of penetration degree. The time duration immediately after kneading of the sample until realization of 180 of penetration degree shall be regarded as a working life (min). After each use, wipe the needle with a soft cloth moistened with cleaning solvent.

4.7 Specific gravity For the measurement of specific gravity, 6.1.1 of JIS K 6833 shall apply.

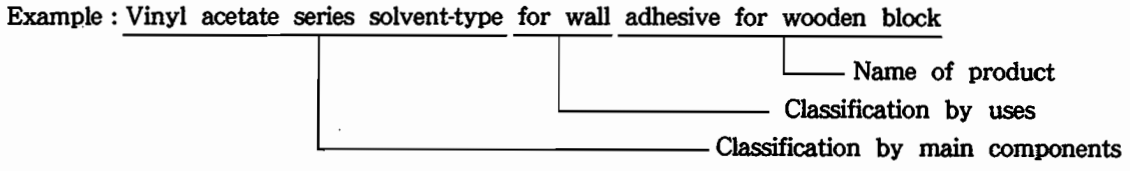
4.8 Conversion of numerical values When using the tester or measuring instrument of the traditional unit in testing, the conversion of the obtained numerical values to those based on the international system of units (SI) shall be made on the basis of the following equation :

$$1\ \text{kgf} = 9.80\ \text{N}$$

5. Inspection Lot size of adhesive shall be decided by the provisions of JIS Z 9001, and sample shall be taken by the rational sampling inspection plan. Inspect the sample to see if the requirements shown in 3. are satisfied.

The inspection specified in 3.(3) shall be carried out when the technical manufacturing condition affecting the quality is changed.

6. Designation of products Designation of products shall be based on the classification by main components, classification by uses and name of products.



7. Marking On the containers of adhesive, the following items shall be marked in an indelible way.

(1) Name of product

(2) Classification

(3) Name of manufacturer or its abbreviation

(4) Date of manufacture and term of effectiveness (or expiration date of effectiveness)

(5) Net mass and area to be spread

(6) Limit time for bonding or working life

(7) Lot number

[Informative reference] Example of marking

Name of product	Name of manufacturer or its abbreviation
Classification	Net mass kg
Lot number	Area to be spread
Term of effectiveness or expiration date of effectiveness month, year	Limit time for bonding from min to min
Date of manufacture month, day, year	

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